

## **Interpolation of Groundwater Levels Using Kriging in Sagar District (M.P.)**

*Vijay Kumar*

### **ABSTRACT**

Groundwater is one of the major sources of water all over the world. Management of this resource is very important to meet the increasing demand for domestic, agricultural and industrial use. Various management measures needs to know the spatial and temporal behaviour of groundwater.

Also most of the groundwater models require the input to be available on a grid pattern. But in the field, these parameters are generally measured at random points. So, interpolation of parameters at the grid nodes is a prerequisite to the use of this data in groundwater modelling.

Interpolation of ground water levels is of significant importance in agricultural and hydrologic contexts. Water recharged into ground water is of prime importance in agriculture as it can be conveniently tapped during the dry season. However, if the water table rises to the root zone depth, so as to adversely affect the yield of the crop, the land is said to be waterlogged.

A variety of interpolation techniques are in use. The most widely used methods in this context are polygonal methods, triangulation methods, isoline methods and kriging techniques. Polygonal methods are based on the principle of Voroni neighbourhood, wherein, the magnitude of the entity at the point under consideration is the same as that at the geometrically nearest measured point. The main drawback in such a scheme is the spatial discontinuity in the concept. Triangulation methods overcome this drawback by considering spatial continuity on the plane generated by the magnitudes of the entity and these observation points. In the isoline method, isolines for the entity are drawn using linear interpolation techniques. Various studies (Vieira et al, 1981; Yost et al, 1982; Knighton and James, 1985; Dahiya et al, 1986; and Laslett et al, 1987) have shown that kriging performs better than the other above mentioned methods.

In this report, an application of kriging technique is shown to interpolate the groundwater levels as measured in Sagar District of Madhya Pradesh.